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60. *Herbarium Suggestions.*—No. 3. *Collecting Specimens.*—For the collection of specimens, the botanist carries with him on his tramps, besides a strong knife or trowel, either a tin box (*vasculum*) or a portfolio containing folded sheets of thin paper in which to place the plants; indeed both the box and the portfolio are desirable.

The box will hold thick roots which he cannot on his trip find time to pare down, and fresh specimens for examination on his return home, but its capacity is limited.

A portfolio, on the contrary, will hold almost an illimitable number of specimens, and, moreover, will keep them in a fair state of preservation for a much longer time than one would naturally suppose. With two portfolios well stocked with paper, and a few driers interposed, we may make an excursion to the country occupying five days or a week, and, on returning home, find the contents but little injured by the delay.

The *vasculum* should be oval-cylindrical in shape, at least eighteen inches long, and with a door opening on one side. A small additional compartment opening at one end will be convenient as a lunch box, and also to contain water plants, nuts, acorns, land shells, or other objects of interest met with on the tramp. The portfolio should measure eighteen by twelve inches. It is best made simply of two stout sheets of pasteboard, not connected by a back or hinges, and covered with "enamelled cloth" to keep out moisture. To tie them together, I prefer a stout cord, or fishing-line, to india rubber bands or straps.

The young botanist soon learns that the collection of specimens does not consist in tearing off a flower with a portion of the stem and a few upper leaves. He finds it impossible to identify his species, in many cases, without having both the sterile and fertile flowers when the plant is monœcious or dicecious, also the mature fruit, the root leaves, and even the root, all of which are component parts of the complete plant and often essential to its recognition. In many cases, the fruit may be obtained from more advanced specimens at the same time as the flower; in others, it must be collected later.

When the plant is very large, it may be cut into sections, or the root leaves may be preserved separately with only a convenient portion of the upper stem, flower and fruit.

In collecting carices, the best way is to gather a number of specimens in a little package and pass the whole through slits in one or more pieces of paper to hold them together, in which shape they are to be dried.

Some water plants are so flimsy that it is necessary to float them out in water, and secure their shape by passing a sheet of paper under them, upon which they are dried and permanently retained.

For digging up roots, a stout clasp knife will answer. Some persons prefer a trowel with its blade narrowed by grinding it off.

Still more convenient is a tool shaped like a triangular dagger. Every body knows what a three sided saw file is. Buy one of the largest size; take it to a blacksmith and have the extreme half of the file bent in a gentle curve on one of its sides until the point is

about one inch out of the true line ; grind off the teeth of the file ; retemper the blade ; put on a strong wooden handle, and get a leather case made for convenience of carriage.

Or, again, such an instrument may readily be made *de novo*. It should be, blade and handle included, about eleven inches long, and each side of the triangle where the blade joins the handle seven-eighths of an inch wide. Some of the advantages of this narrow but strong instrument are that it will follow the roots we wish to extract without cutting them, and into crevices of rocks where a broader tool could not be inserted or would be liable to break. It was the favorite instrument of that eminent botanist, Philip Barker Webb, in his Alpine excursions. [See Collector's Handbook, by the Rev. W. W. Spicer, M. A., London, 1869, p. 158.]



In the accompanying wood-cut, the blade is not quite enough curved.  
F. J. B.

61. Note from Dr. Engelmann.—I have now had Prof. Wood's specimen of *Opuntia* from Westchester Co., one from New Jersey sent by Mr. Meehan, and a third from New England, probably Massachusetts, furnished by Prof. Gray, side by side in cultivation with our Missouri and Illinois *O. Rafinesquii*. It is certainly less spiny, and sometimes the flower is smaller than in our plant, but the deep green colour, the long spreading leaves, and the bright brown bristles, especially on the older joints, on which they increase in number and length to considerable bunches, are characteristic of the plant. With them I have growing the true *O. vulgaris* sent by Dr. Schott from the banks of the Potomac and probably not found north of Chesapeake Bay, with thicker light green joints, shorter, thicker, more adpressed leaves, and small bunches of short thin greenish yellow bristles. This is the plant which is cultivated in Europe under that name and has become naturalized in Northern Italy and which I have described and figured as such in Vol. 4, Pacif. R. Reports.

Mr. H. Gillman of Detroit has found in the neighborhood of that city *Spirodela polyrrhiza* in bloom. His specimens are stouter than the Staten Island ones, and all the flowers I could examine, 5 in number, were 2-ovulate, the ovules joining at the erect funiculus, and fully anatropous, while, in that case, the single ovules were hemi-anatropous, the specimens being, as was suggested at the time, depauperate otherwise, in the structure of the anthers etc., both specimens are identical.

You may have heard that the Germans, or rather the Rhine-landers were quite excited last spring about the discovery of the aromatic *Asperula odorata* in America, an herb which is highly prized for the flavor it imparts to wine. I obtained specimens and found them to be *Galium triflorum*, Mchx. Upon my publishing this for the information of my German friends, the true *Asperula odorata* was sent to me by the editor of the N. Y. Staats-Zeitung your city, as having been found in the woods near Brooklyn. There can be no doubt of my having seen fresh specimens of the true plant. How can that be? Has it been planted and naturalized there, or